What Is Claimed Is:

1. A method for forming aluminum bumps by sputtering and chemical mechanical polishing comprising the steps of:

providing a pre-processed electronic substrate with a plurality of input/output (I/O) pads formed on a top surface;

depositing an insulating material layer on top of said plurality of I/O pads to a thickness that is substantially the thickness of Aℓ bumps to be formed;

photolithographically forming a plurality of openings with one on each of said plurality of I/O pads;

sputter depositing a metal comprising Aℓ filling said plurality of openings and covering a top surface of said insulating material layer;

chemical mechanical polishing said electronic substrate until a plurality of Aℓ bumps is formed with a top surface of the bump flush with said top surface of the insulating material layer; and

removing at least partially a thickness of said insulating material layer by a wet etch process.

2. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of forming said plurality of I/O pads in a metal comprising Aℓ.

3. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer of a thickness of at least 5 μm.

4. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer of a material selected from the group consisting of silicon oxide, spin-on-glass and polyimide.

5. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer by at least two layers of different materials.

6. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer by a first layer of Si_3N_4 or SiO_2 and a second layer of polyimide on top of said first layer.

7. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer by at least two layers of different materials to a total thickness of at least 5 μm.

8. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of depositing said insulating material layer by at least two layers of different materials to a total thickness between about 5 μm and about 10 μm.

9. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of sputter depositing a metal that consists of Aℓ and Cu.

10. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of sputter depositing a metal that consists of Aℓ and less than 3 wt. % Cu.

11. A method for forming aluminum bumps by sputtering and chemical mechanical polishing according to claim 1 further comprising the step of conducting said wet etch process incorporating buffered oxide etch (BOE).

12. A method for forming aluminum bumps on a semiconductor structure comprising the steps of:

providing a pre-processed semiconductor structure with a plurality of I/O pads on top;

printing a layer of polyimide-containing material having a thickness of at least 5 μm on top of said structure forming a plurality of openings on each of said plurality of I/O pads exposed;

filling said plurality of openings with a metal comprising Aℓ;

removing excess metal from areas other than said plurality of openings; and

removing at least partially said layer of polyimide-containing material by a wet etch process.

13. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of forming said plurality of I/O pads in a metal comprising Aℓ.

14. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of printing said layer of polyimide-containing material by a screen printing or stencil printing technique.

15. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of printing said layer of polyimide-containing material to a thickness between about 5 μm and about 10 μm.

16. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of filling said plurality of openings with a metal comprising Aℓ and Cu.

17. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of removing excess metal until a surface of said metal in the plurality of openings is flush with a top surface of said layer of polyimide-containing material.

18. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of removing at least partially said layer of polyimide-containing material by an etchant comprising HF and NH_4F.

19. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of removing at least ½ of a total thickness of said layer of polyimide-containing material to facilitate bonding to said Aℓ bumps formed in said plurality of openings.

20. A method for forming aluminum bumps on a semiconductor structure according to claim 12 further comprising the step of removing completely said layer of polyimide-containing material to facilitate bonding to said Aℓ bumps formed in said plurality of openings.